Preventive Services for the Elderly: Would Coverage Affect Utilization and Costs under Medicare?

ABSTRACT

Objectives. This study was undertaken to determine whether adding a benefit for preventive services to older Medicare beneficiaries would affect utilization and costs under Medicare.

Methods. The demonstration used an experimental design, enrolling 4195 older, community-dwelling Medicare recipients. Medicare claims data for the 2 years in which the preventive visits occurred were compared for the intervention (n = 2105) and control (n = 2090) groups. Monthly allowable charges for Part A and Part B services and number of hospital discharges and ambulatory visits were compared.

Results. There were no significant differences in the charges between the groups owing to the intervention, although total charges were somewhat lower for the intervention group even when the cost of the intervention was included. Charges for both groups rose significantly as would be expected for an aging population. A companion paper describes a modest health benefit.

Conclusions. There appears to be a modest health benefit with no negative cost impact. This finding gives an early quantitative basis for the discussion of whether to extend Medicare benefits to include a general preventive visit from a primary care clinician. (*Am J Public Health.* 1995;85:387–391)

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Introduction

The Medicare program provides coverage for acute illness and chronic medical care management, but it covers few preventive services. This lack of preventive services coverage parallels practices by private health insurers, with the exception of health maintenance organizations. In 1985, Congress mandated that Medicare evaluate the cost and effectiveness of coverage for a comprehensive range of preventive services, including a physical exam and laboratory tests, a history and health risk assessment, and risk counseling.[1]

To this end, the Health Care Financing Administration (HCFA) selected five sites nationally to evaluate the cost and effectiveness of comprehensive coverage for an annual preventive and health risk screening service. Two of the evaluation sites, Seattle and San Diego, conducted their evaluations among enrollees in local health maintenance organizations; a third site, Los Angeles, selected patients in the practices of UCLA faculty; and the fourth site, Pittsburgh, selected populations in adjoining rural counties receiving care from regional hospitals. The Baltimore site was the only urban site that selected a broad base of community residents, with covered preventive services being provided by the individual's primary care provider. All the sites randomized the selected populations into two groups, those with usual Medicare coverage and those with additional preventive services coverage. The Medicare Preventive Services Demonstration took place over 2 years, from May 1989 through April 1991, and the results reported here are for the Baltimore site.

The debate about the cost-effectiveness of prevention in general and for older persons in particular continues[2,3] and is particularly timely. A concern of prevention programs overall, and of this demonstration specifically, was that allowable charges would be significantly higher for the intervention group during the 2-year demonstration as a result of additional screening and follow-up diagnostic procedures and treatment. Savings as a result of the intervention were not anticipated during the 2-year interval of the study.

This paper reports on both expenditures for covered Medicare services based on Medicare allowable charges (Medicare reimbursement plus beneficiaries' copay and deductibles) as well as the costs of the intervention. The report covers the first 2 years of the demonstration for individuals randomized into the two groups as defined above: those who received coverage for an annual preventive visit and tests, and those who continued under standard Medicare coverage. At the time the study was undertaken, standard Medicare coverage included two preventive services: pneumonia and hepatitis B immunization. During the demonstration, coverage for Pap smears and mammography was added. Other effects of the demonstration, use of the waivered preventive services, and the

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impact of this extended coverage on health status and health risks are reported in a companion paper in this issue.[4]

Methods

A total of 4459 Medicare beneficiaries aged 65 and over were interviewed. Two hundred and sixty-four persons were found ineligible after the interview, either because their provider was not participating or because they had withdrawn before the intervention began. Eligibility of Medicare beneficiaries for the study and the numbers enrolled are discussed in the preceding paper.[4] The remaining 4195 beneficiaries were enrolled in the demonstration and randomly assigned to either the intervention (n = 2105) or the control (n = 2090) group. The groups did not differ significantly in baseline health characteristics, sociodemographics, insurance coverage, prior health services utilization, or health habits,[4] with two exceptions. Among the 30 items assessed for health risks, there was a difference in only one area: the percentage of the population who carried out brisk physical activities three or more times a week was lower among control subjects than among intervention subjects (54.3% vs 57.3%, $P = .05$). In terms of demographics, the only difference was a larger proportion of Black elders among the control group (15.3% vs 11.8%, $P = .002$).

Vouchers were mailed to 2105 beneficiaries for two free preventive visits—one for each year of the study—to their primary care physician. Approximately two thirds (63%) of the intervention group used the preventive services one or more times during the 2-year period.[4] In addition, the patient's physician could request that the patient be sent a voucher for an additional follow-up counseling visit following each annual preventive visit. More than half (52%) of those seen received and used vouchers for follow-up visits.

The preventive services package was based primarily on recommendations of the US Preventive Services Task Force for persons aged 65 and over[5] and was modified by the clinician members of the study team. The covered services included physical examination, including history and evaluation; laboratory procedures and immunizations; and counseling for health risks. Physicians were expected to take a complete history, including vision, hearing, and dentition, and to conduct a physical exam that included a digital rectal exam for men and breast and pelvic exams for women. Laboratory tests included those for total cholesterol and occult blood in stool, and a Pap smear. The counseling covered 10 important health risks: smoking, exercise, diet, alcohol use/abuse, emotional distress, injury prevention/falls, medication use/adverse reactions, sleep problems, functional status, and urinary incontinence. The physician completed a checklist of services provided, along with the reasons why any specific exams were not performed, such as that they were just recently performed or were contraindicated, or that the patient was being referred to a specialist. Clinician modification was permitted and could cover a number of situations—for example, a very recent visit in which one or more of the procedures had already taken place. The physician then provided a checklist of services performed so as to obtain payment for the preventive services exam. A fixed payment of $145 was provided for all services, including the history and clinical exam, the laboratory tests, and the counseling during the visit. If the physician had requested a follow-up risk counseling visit, an additional payment of $40 was provided for this service. Overall, 235 physicians from three hospital-based general medical clinics, 13 community group practices, and 102 solo/partnership practices participated in the demonstration. A full description on physician recruitment can be found in German et al.[4] (this issue).

Medicare Charges and Utilization Measures

Allowable charges are used to capture both Medicare payment to physicians (reimbursement) and beneficiary copayments and deductibles. Medicare allowable charges for all demonstration participants were obtained from National Claims History files provided by the HCFA. The files include all claims submitted through the Maryland fiscal intermediary for the period July 1989 through June 1991. Earlier work done by the authors has shown that less than 5% of charges for the state's Medicare population occur outside the state and are missing from this file.

Medicare services and allowable charges were obtained from Part A claims (acute hospital, skilled nursing facilities, home health, and hospice) and Part B claims (primarily charges for physician services in office and hospital settings). Added to this were the paid preventive service claims for those in the intervention group, plus Medicare cost-based payments of approximately $19 000 for individuals receiving services at a local HCFA-waivered care program, the Municipal Health Services Demonstration.[4] Persons enrolled in this demonstration were removed from eligibility for the Medicare Preventive Services Demonstration; however, approximately 505 subsequently made initial use of the Municipal Health Services in the ensuing 2 years while maintaining their primary source of care outside of it.

Inpatient services and ambulatory care visits were determined from claims data. Hospital discharges were adjusted for the number of persons available—that is, enrolled and alive at beginning of each month. Mean number of inpatient days was calculated for each year as the total number of days in hospital for persons with an admission. Ambulatory visits were defined as Medicare Part B physician claims for either a medical, surgical, or consultant visit taking place in an office.

Additional patient information, including sociodemographic characteristics, use of health services, and health status using the Quality of Well-Being Scale,[6] was obtained by telephone interviews at the time of enrollment and at the conclusion of the intervention 2 years later.[4]

Approach to the Analysis

Intervention and control group allowable charges and utilization rates were described for each year of the study. Mean charges per person per month and mean utilization rates were computed. Adjustments were made to the denominator to take into account a four-and-a-half month phased-in enrollment and attrition due to death. To explicitly take into account both time and the interaction of time with the intervention, a mixed-effects regression model was applied to monthly data to test the effect of the intervention. This method adjusts for collinearity of time series observations[7,8] and allows for different numbers of observations for each individual.

Results

Overall, it had been anticipated that the intervention group would initially have higher ambulatory charges owing to the additional costs of the preventive services and to costs associated with follow-up of positive findings from screening for disease and health risks. It was also hypothesized that these additional costs would decline over time as a result of the preventive services and the reduced need for subsequent care. Eventually, the inter-

vention group was expected to incur lower costs than the control group.

Medicare Charges

Contrary to expectation, the total Medicare allowable charges were somewhat higher for the control group in the first year, even when the payments for preventive services were included for the intervention group (Table 1). In the second year, allowable charges were 2.5% higher for the control group than for the intervention group. The savings expected for the intervention group over the longer term appear to be occurring in the second year. In year 2, allowable charges in the control group were higher for all Part A services and for institutional Part B than were similar charges in the intervention group. The intervention group had lower monthly hospital charges per person compared with the control group in year 1 ($205 vs $216) and in year 2 ($264 vs $274). The monthly charges for noninstitutional Part B were virtually the same for the intervention and the control groups in year 1 ($112 vs $111) and in year 2 ($129 vs $127).

TABLE 1—Total Charges ($), by Study Year[a] and Group

	Year 1		Year 2	
	Intervention Group (n = 2105)	Control Group (n = 2090)	Intervention Group (n = 2020)	Control Group (n = 1971)
Medicare Part A				
Hospital	5 027 343	5 212 370	6 284 111	6 355 516
Nursing home	82 565	71 506	102 040	162 652
Home health	281 358	297 208	382 302	499 908
Hospice	2648	6984	8869	12 201
Medicare Part B				
Noninstitutional[b]	2 550 600	2 666 276	2 948 658	2 930 737
Institutional[c]	689 059	732 576	884 355	1 045 762
Cost of intervention[d]	190 865	. . .	119 051	. . .
Cost of other waivered care[e]	1640	4143	5756	7423
Total	8 826 078	8 991 063	10 735 142	11 014 199

[a]Year 1 charges, July 1989 through June 1990; year 2 charges, July 1990 through June 1991.
[b]Part B noninstitutional claims are primarily physician claims for services in office, hospital, nursing home, home, etc. Supplier and some lab charges are included in this type claim.
[c]Part B institutional claims are for outpatient care in, for example, clinics, outpatient x-ray and lab, ambulatory surgery, and emergency room use.
[d]Preventive visits were reimbursed $145 and counseling visits, $40.
[e]Charges for Medicare-covered services received by patients through a waivered program funded by the Health Care Financing Administration.

Use of Services

Part A. The proportion of individuals using any Medicare Part A hospital services was greater for control patients in both years of the study (Table 2). In the first year, 22.6% in the control group were hospitalized versus 20.9% in the intervention group. Similar patterns of differential use were found in the second year. Discharges per 1000 were lower for the intervention group in both years (Table 3). There were slight differences favoring the control group when other dimensions of utilization were considered. For example, although the intervention group had a lower proportion of those with any hospitalization, control subjects had fewer mean number of inpatient days and shorter lengths of stay in both years (Table 3). Overall, there were low proportions of persons who used Medicare-reimbursed nursing home, home health, or hospice services, with similar or slightly higher proportions using these services in the control group than in the intervention group (Table 2).

Part B. It had been anticipated that screening would lead to an increased use of physician visits, specifically to provide follow-up care for newly identified problems. However, examination of plots of visits by control and intervention subjects during each month suggests that patients in the intervention group had somewhat lower rates of office visits (Table 3) during the time when most intervention visits were made but overall had a slightly higher proportion of ambulatory utilization than those in the control group (Table 2). This was true for both years. This finding was in contrast to the somewhat greater hospital discharge rate in the control group, as noted above.

TABLE 2—Proportion (%) of Subjects with Medicare Claim during Each Study Year, by Type of Service and Study Group

	Year 1		Year 2	
	Intervention Group (n = 2105[a])	Control Group (n = 2090[a])	Intervention Group (n = 2020[b])	Control Group (n = 1971[b])
Medicare Part A				
Hospital	20.9	22.6	21.4	23.4
Nursing home	0.6	0.6	0.9	1.1
Home health	6.3	7.1	7.4	8.8
Hospice	0.0	0.0	0.0	0.0
Medicare Part B				
Noninstitutional[c]	92.5	91.0	92.3	91.0
Institutional[d]	50.2	52.8	51.6	54.0
Ambulatory visits[e]	85.0	83.3	86.8	85.2

[a]Number of persons enrolled; enrollment took place over a 4.5-month period.
[b]Number of persons available to make claims (i.e., survivors) at the beginning of year 2.
[c]Part B noninstitutional claims are primarily physician claims for services in office, hospital, nursing home, home, etc. Supplier and some lab charges are included in this type claim.
[d]Part B institutional claims are for outpatient care in, for example, clinics, outpatient x-ray and lab, ambulatory surgery, and emergency room use.
[e]Ambulatory visits are those claims for medical, surgical, or consultative services in the office setting; preventive visits made as part of the intervention are not included.

Mixed-Effects Model Results

The mixed-effects model adjusts for attrition and for time series collinearity effects.[7,8] The model was used to test for

TABLE 3—Comparison of Selected Measures of Utilization, by Study Year and Study Group

	Year 1[a]		Year 2[b]	
	Intervention Group (n = 2105)	Control Group (n = 2090)	Intervention Group (n = 2020)	Control Group (n = 1971)
Discharges per 1000[c]	345.6	355.2	378.0	404.4
Mean inpatient days[d]	15.7	14.7	17.6	16.8
Mean length of stay per admission	12.4	10.5	10.1	9.9
Mean ambulatory visits per year[e]	6.5	7.0	7.2	7.2

[a]Claims from July 1989 through June 1990.
[b]Claims from July 1990 through June 1991.
[c]Adjusted for number of persons available for admission (enrolled and living) each month per 1000.
[d]Calculated as the total days in hospital for persons with a discharge in that year.
[e]Calculated as the number of visits each month divided by the number of persons enrolled and living that month × 12.

TABLE 4—Impact of the Intervention on Selected Measures of Cost and Utilization, with Time in Study[a] Controlled

Outcome Variable	Intercept[b] (*P*)	Time Effect[c] (*P*)	Intervention Effect (*P*)	Interaction of Time and Intervention Effects (*P*)
Total charges[d]	$283.18 (<.001)	$17.23 (<.001)	−$8.19 (.841)	−$2.48 (.424)
Hospital charges[e]	$160.27 (<.001)	$9.75 (<.001)	−$11.24 (.689)	$0.75 (.764)
Physician charges[f]	$100.77 (<.001)	$2.44 (<.001)	−$11.50 (.162)	$0.27 (.617)
Other Part B[g]	$21.73 (<.001)	$1.43 (<.001)	$0.39 (.920)	−$0.47 (.134)
Other Part A[h]	$6.83 (.021)	$1.47 (<.001)	$2.68 (.549)	−$0.60 (.110)
Ambulatory[i]	0.43 (<.001)	.004 (<.001)	−.034 (.028)	.001 (.162)
Hospital[j] discharges	.026 (<.001)	.001 (<.001)	−.001 (.689)	−.000 (.447)

[a]Model for average responses in outcome variable (y) incurred over time is $y = B_0 + B_1t + B_2I + B_3t*I$, where t = time, I = intervention group.
[b]Estimate of dollars or utilization at the first month of the intervention.
[c]Impact for both dollar amounts and number of visits and discharges are for a 1-month period.
[d]Total charges are all Part A and Part B Medicare charges, plus costs of the intervention visits plus charges from an existing Medicare waivered program for 12% of the study group.
[e]Part A hospital charges.
[f]Part B noninstitutional claims are physician claims for services in office, hospital, nursing home, etc.
[g]Other Part B charges are institutional claims for outpatient care in, for example, clinics, outpatient x-ray and lab, ambulatory surgery, emergency room use.
[h]Other Part A includes home health, nursing facility, and home care charges.
[i]Ambulatory visits are number of visits each month, derived from Part B noninstitutional claims in which the place of visit was a doctor's office and the type service was a medical, surgical, or consultative visit.
[j]Hospital discharges are number of discharges per month, derived from Part A claims.

statistically significant differences in allowable charges and in use of inpatient and ambulatory services during the 24 months of the demonstration for both groups. The findings using this model are consistent with the results described above. Overall, the intervention did not contribute to increased costs but did contribute to a reduced number of ambulatory visits. When time and the interaction of time with the intervention were entered in the regression model, the impact of the intervention on charges was not statistically significant (Table 4). There was a significant time trend for all charges and for utilization. For example, total charges started at $283.18 for the average person in the control group and increased at an average of $17.23 each month. The intervention effect was not significant. The interaction between time and being in the intervention group had a slightly negative effect on the trend in charges, but this was not significant.

For the number of ambulatory visits, there was a significant negative intervention effect and a small positive interaction of time and intervention. This shows the intervention group starting off with fewer visits and increasing at a faster rate over time. For the number of hospital discharges, there was little evidence of any difference between the intervention and control groups.

Discussion

The Medicare Preventive Services Demonstration in Baltimore has shown that among a representative group of Medicare eligibles in the community, approximately two thirds over a 2-year period will take advantage of the opportunity to be seen by their primary care physician at least once for an annual preventive visit, and the result will have little or no impact on charges under Medicare for all who are offered the visits. This appears to be an unexpected and positive finding. Usually one expects to find an incremental cost associated with the provision of preventive services,[3,9] and whether the charges over time will be lower as a result of preventive care is a question to be answered through additional follow-up.

While there are an increasing number of studies of the efficacy of targeted prevention programs for older individuals,[2,9–11] there are no known randomized trials of the effect of a general preventive visit in this age group. The Insure project, a trial of extending benefits for policyholders of commercial insurance that included older persons, reported willingness to pay more for a premium with a preventive benefit.[12]

The explanation for our findings may lie in one of two areas, or both. First, a general preventive visit may in fact have a positive impact on the health of the elderly. Expectations about utilization and cost effects of prevention have been based on younger adult populations despite a growing awareness that the elderly can also benefit from prevention.[10,13,14] Second, randomization may not have totally equalized the two groups, resulting in the control group being at a slightly higher level of overall average use. However, health measures and self-reported health care utilization before the demonstration began showed virtually no significant differences between the study groups.

We conclude that there appears to be a modest health benefit with no negative cost impact. This finding is important to those setting policy for Medicare and discussing health care reform for older individuals in that it gives a quantitative basis for broadening Medicare coverage to include a general preventive visit. It will be important to look at long-term effects to determine if this continues. □

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